

ABSTRACT

Disclosed is a method of preparing a micro-structured powder for bonded magnets having high coercivity, which is
5 advantageous in terms of low preparation costs by recycling magnet scraps, simplified mass production, minimal environmental contamination by such a recycling process, and the preparation of stable anisotropic powders having high coercivity. Further, a magnet powder prepared by the above
10 method is provided. The current method is characterized in that R-Fe-B type anisotropic sintered magnets or scraps thereof are crushed to prepare 50-500 μm sized magnet powders, which are then mixed with 1-10 wt% of rare earth fluoride (RE_3) powders and thermally treated at high temperatures (500-1100°C)
15 in a vacuum or an inert gas, to cause the change of matrix-near surface and grain boundary of the powders. Thus obtained powders include a matrix phase having $\text{R}_2\text{Fe}_{14}\text{B}$ crystal structure, a R-rich grain boundary phase containing rare earth fluoride, and other phases, in which the matrix phase has an average
20 grain size of 1-20 μm , and the powders have an average size of 50-500 μm with superior magnetic characteristics of $(\text{BH})_{\text{max}} \geq 20$ MGOe and $i\text{Hc} \geq 5$ kOe.